

TRACT SUMMARY REPORT

Minerals Management Service, North Central Region
Billings District
Billings, Montana

Date: November 1, 1982

TRACT DESCRIPTION

Tract Name: Ashland (Decker-Birney) No.:
Coal Region: Northern Powder River Basin
State: Montana County: Powder River
BLM Resource Area and Planning Unit: Powder River
USGS Quadrangle Maps: Willow Crossing, Coleman Draw, King Mountain
Legal Description: See Attachment A and Attachment B (Tract Location Map)
Known Recoverable Coal Resource Area (KRCRA): Northern Powder River

Tract Acres (by BLM)
Federal Uncommitted:
Federal Committed:
State:
Private (Fee):
Total Tract:

Approximate Acres Underlain by Coal:
Federal Uncommitted: 1131
Federal Committed: 0
State: 640
Private(Fee): 2096
Total Tract: 3867

Estimated In-Place Coal Tonnage:
Federal Uncommitted: 122.0 MMT
Federal Committed: 0 MMT
State: 69.1 MMT
Private (Fee): 230.5 MMT
Total Tract: 421.6 MMT

Estimated Recoverable Coal Resources:
Federal Uncommitted: 109.8 MMT
Federal Committed: 0
State: 51.4 MMT
Private (Fee): 186.2 MMT
Total Tract: 347.4 MMT

ENTITIES EXPRESSING INTEREST

Meridian Land and Minerals Co.
Cities Service Co.
Chevron Resources Co.

COAL RESOURCE CLASS DESIGNATION

CLASS 1: Good

Confidence in resource estimates is good because the surface areas of category "A" and "B" resources cover two-thirds or more of the total surface area of the tract

CLASS 2: Moderate

Confidence in resource estimates is moderate because the surface areas of category "A" and "B" resources cover one-third to two-thirds of the total surface area of the tract.

CLASS 3: Poor

Confidence in resource estimates is poor because the surface areas of category "A" and "B" resources cover one-third or less of the total surface area of the tract.

POTENTIAL FOR DEVELOPMENT OF TOTAL TRACT

EVALUATION FACTORS	CLASS 1	CLASS 2	CLASS 3
Coal Resources	X		
Coal Quality	X		
Transportation			X
Minability	X		
Marketability		X	
Overall Class		X	

See Attachment C.

COAL RESOURCE CATEGORY DEFINITIONS

CATEGORY "A" RESOURCES

Resource quantity is estimated from data sources that are adequately spaced to assume, with a high degree of confidence, continuity between data points. The geologic character of the area is well defined. The resources for the Mud Springs tract in this category also meet the demonstrated reserves category of USGS Bulletin 1450-B.

CATEGORY "B" RESOURCES

Resource quantity is based on an assumption of continuity between data points with a lower confidence level than that of category "A" resources. The geologic character of the area is not as well defined as category "A" resources.

CATEGORY "C" RESOURCES

Resource quantity is based on an assumption of what can reasonably be expected to exist in the same producing region under analogous geologic conditions with a lower confidence level than that of either category "A" or "B".

POTENTIAL FOR DEVELOPMENT OF TOTAL TRACT

COAL TONNAGE OF ASHLAND (DECKER-BIRNEY TRACT)

Coal Bed	Average Thickness	Resources (million short tons)		
		Category A	Category B	Category C
Knobloch	62	421.6	---	---

Coal tonnages were calculated using the accepted unit weight of 1770 tons per acre-foot for subbituminous coal.

Federal, State, and privately held coal in this tract is all under Category "A". Only the Knobloch bed is considered here. Tonnages are given on page 1 of this report.

COAL QUALITY
TOTAL TRACT - ASHLAND (Decker-Birney)

(Values in percentage, except BTU)

Coal bed	Number of samples	Moisture	Volatile Matter	Fixed Carbon	Ash	Sulfur	BTU/lb
Knobloch	10	26.47	30.37	38.68	4.46	0.176	8,822

GEOLOGY OF THE ASHLAND (DECKER-BIRNEY)

The Ashland (Decker-Birney) tract lies near the northern margin of the Powder River Basin. The surrounding rocks are of the Paleocene Fort Union Formation and Eocene Wasatch Formation. The Tongue River Member of the Fort Union contains the most significant coal in the area.

Rock strata comprising the Tongue River Member in the area are essentially flat-lying, but do exhibit a regional southward dip of less than one degree.

The Tongue River Formation contains at least six persistent coal beds 5 to 35 feet thick and several other thin, less persistent, beds. The Knobloch bed is present within the tract boundary and has an average thickness of 62 feet.

There are no apparent geologic hazards in the tract.

References

American Society for Testing and Materials, 1971, Standard specifications for classification of coals by rank (ASTM Designation D 388-66) in gaseous fuel, coal and coke: pt. 19, p. 59.

Matson, R. E., Blumer, J. W., and Wegelin, L. A., 1973, Quality and reserves of strippable coal, selected deposits, southeastern Montana: Montana Bureau of Mines and Geology Bulletin 91, 135 p.

POTENTIAL USE OF COAL: Feed stock for either an electrical generation plant or a synfuel plant.

TRANSPORTATION:

	Mode	Distance to Transportation Link
Existing		
Being Developed		
Being Planned	Railroad	85 miles
None Planned		

MINABILITY:

Type of Mine: Dragline or truck-shovel surface mine

Estimated Recovery:

Based on current practices in the Powder River Basin coal region, a recovery factor of 90 percent is typical. However, this figure may or may not be attained.

Estimated Annual Production:

Federal Uncommitted: 2.7 million tons

Total Tract: 8.6 million tons

Estimated Mine Life: 40 years

Estimated Surface Acres to be Mined Per Year:

Federal Uncommitted: 28

Total Tract: 96

Active, Inactive, and Abandoned Mines or Leases in Tract Vicinity:

The Colstrip mines are approximately 30 miles to the northwest.

MARKETABILITY

The area in which the tract is located had two general expressions of interest. In consideration of the Class 1 ratings for coal resource, coal quality, and minability, the Class 3 transportation rating, and the two general expressions of interest, the marketability of this tract is Class 2.

OVERALL

The tract was rated as Class 2 overall in consideration of the above evaluation factors.

DEFINITIONS AND ASSUMPTIONS FOR THE ASHLAND (Decker-Birney) TRACT:
See Attachment D

COAL DETERMINATIONS
ASHLAND (Decker-Birney) TRACT

Coal Quality

This coal has moderately high BTU content and a very low percentage of sulfur when compared to other coals of the Powder River Basin. Therefore a Class 1 rating was applied to this category.

Transportation

The tract is located approximately 85 miles from the nearest rail line. A railspur is planned; however, a Class 3 rating is applied.

Minability

A single recoverable 60-foot coal seam and a maximum stripping ratio comparable to operating mines in the Basin results in a Class 1 rating for minability for this tract.

MINING ENGINEERING
DEFINITIONS AND ASSUMPTIONS
- Ashland (Decker-Birney) -

Deductions from the in-place resource were made for buffer zones and high-wall reduction zones. A recovery factor of 90 percent was then applied to the minable resource to determine the recoverable resource.

The rating for transportation was determined from the following table:

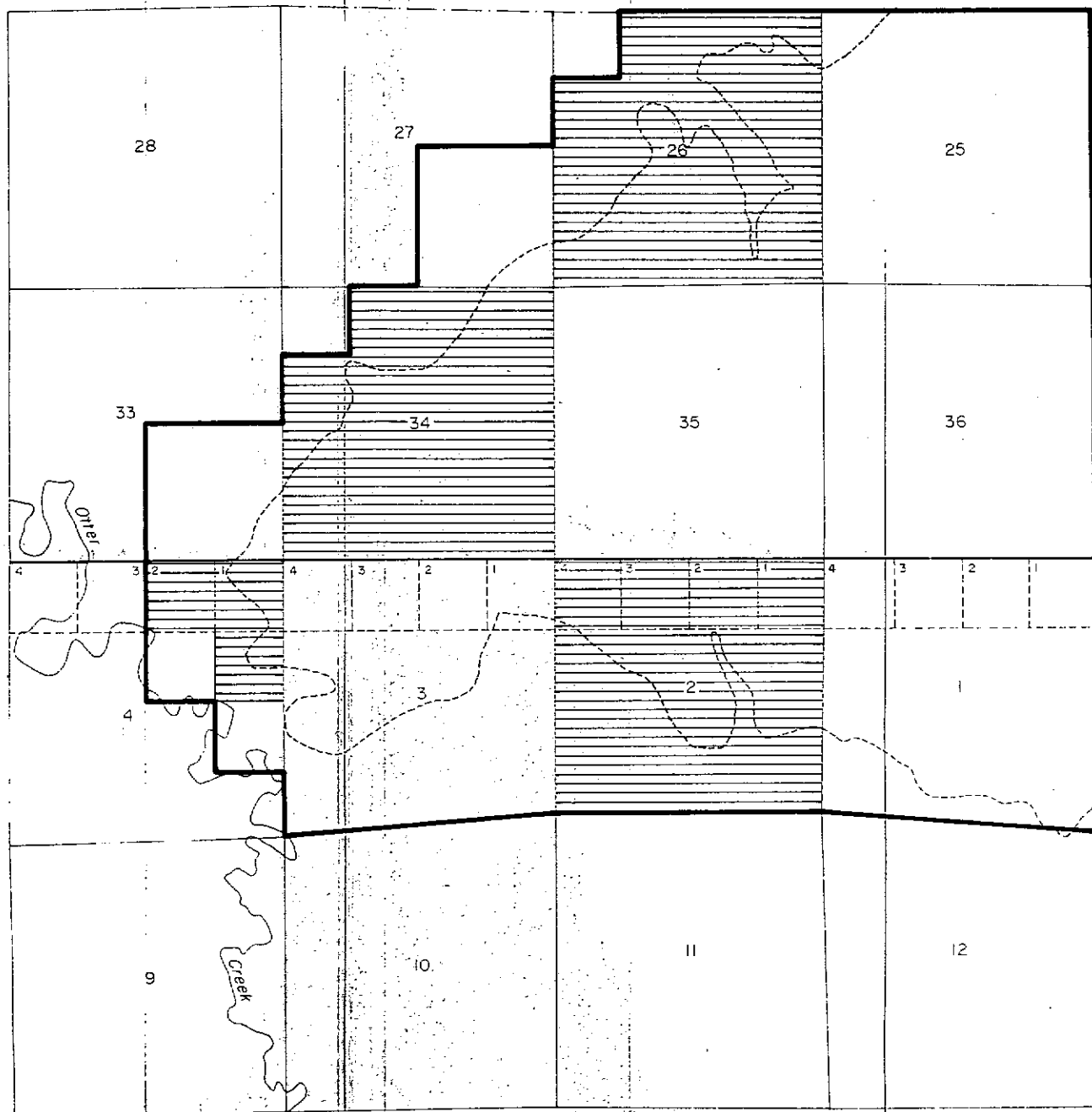
Rating	Distance to Established Transportation Link
Good	0-7 miles
Moderate	7-15 miles
Poor	15- miles

For a tract with more than one minable seam a weighted average proximate analysis was figured for the tract. The tract's proximate analysis was then compared to analyses from other marketed coals in the area for rating purposes.

ASHLAND (DECKER-BIRNEY) LOGICAL MINE-SIZE TRACT

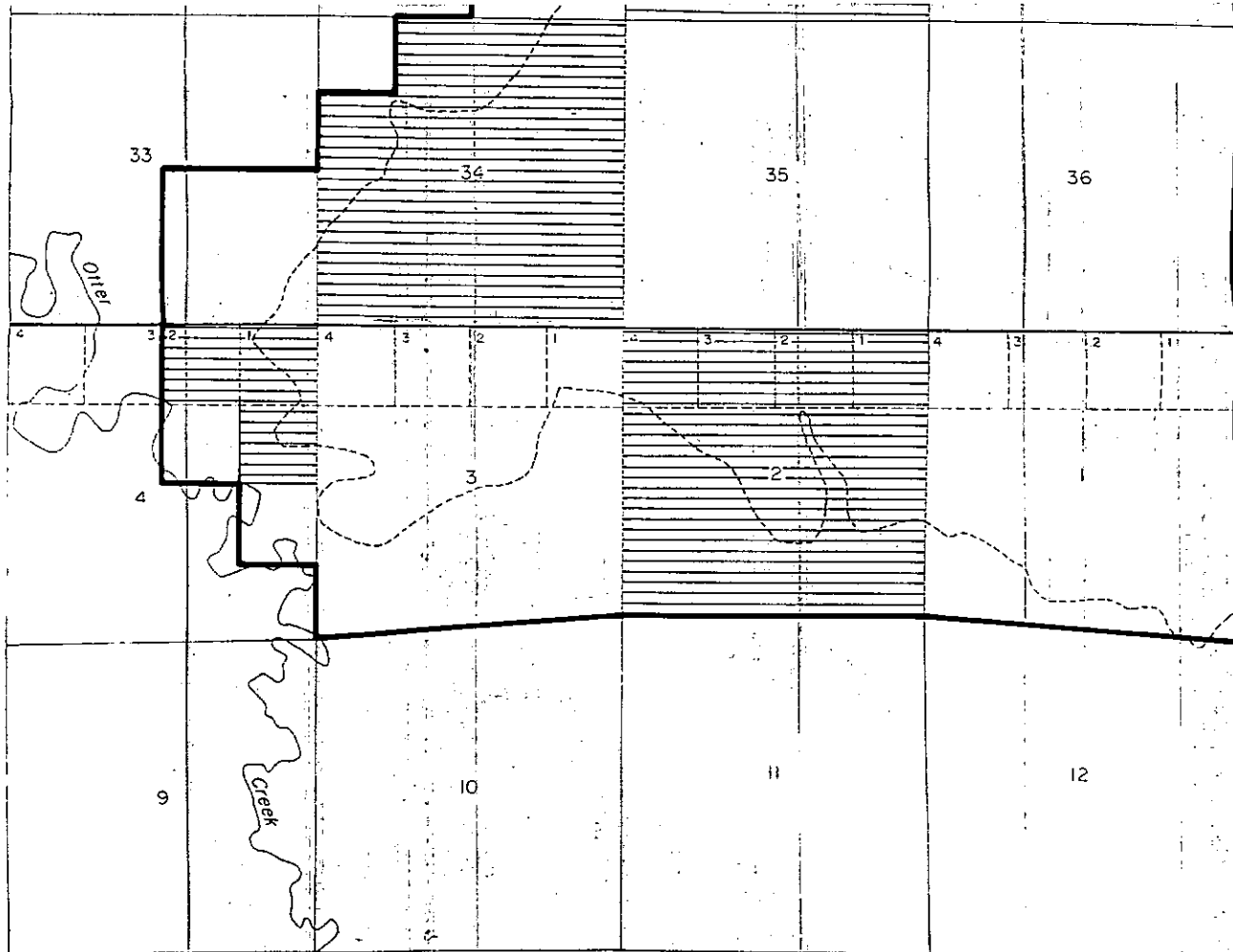
ATTACHMENT B

R. 45 E.



R. 45 E.

3 S.



R. 45 E.

EXPLANATION



LOGICAL MINE-SIZE TRACT

FEDERAL COAL

BURN LINE—Knobloch bed (inferred)

SCALE 1:48 000



DATUM IS MEAN SEA LEVEL

MAXIMUM ECONOMIC RECOVERY
for
ASHLAND (DECKER-BIRNEY) TRACT

1982 Powder River Coal Lease Sale

December 15, 1981

Location

The tract is located in Powder River County, Montana, 6 miles south east of Ashland, Montana. The Federal tract follows a checkerboard pattern with Burlington Northern and State owned coal. A legal description of the the Federal coal is as follows:

T. 3 S., R. 45 E., P.M.M.

Sec. 26: S1/2, NE1/4, S1/2 NW1/4,
and NE1/4 NW1/4;

Sec. 34: S1/2, NE1/4, S1/2 NW1/4,
and NE1/4 NW1/4.

T. 4 S., R. 45 E., P.M.M.

Sec. 2: All;

Sec. 4: Lots 1 and 2, and SE1/4 NE1/4.

* A total of 1949 acres is included in the Federal tract.

Other Resources

There exists a little scoria within the area, but the deposit is not large enough to allow efficient or economic recovery.

Oil and gas resources are not known within the area. However, this area has been classified as being prospectively valuable for oil and gas. The nearest oil and gas production can be found in the Liscom Creek oil field and two other unnamed fields about 20-25 miles north of the area.

The area has also been classified as being prospectively valuable for sodium.

Geology

The 1949 acre tract lies near the northern margin of the Powder River Basin, where rocks of the Paleocene Fort Union Formation and the Eocene Wasatch Formation are widely distributed. Only the Tongue River member of the Fort Union contains significant coal beds in the area.

Rock strata composing the Tongue River member in the area are essentially flat lying. However, they do exhibit a regional southward dip of less than one degree.

* Indicates a change in acreage from the Tract Development Summary Report dated November 10, 1981. The acreage listed in this report is now accurate.

The Tongue River formation contains at least six persistent coal beds 5 to 35 feet thick, and several other thin, less persistent beds. One of the six beds is present within the boundaries of the tract. This bed is the Knobloch seam which averages 60 feet thick over the tract.

Coal Reserves

The in-place reserve for the 1949 acre tract is 132 million tons of coal. This is based on the recovery of the Knobloch seam up to 300 feet of cover, or a 6:1 foot to foot stripping ratio, whichever is less. Using a 90% recovery factor, the recoverable reserve is equal to 119 million tons of coal. In general, the overburden above the Knobloch over the entire 1949 acres averages 150 feet in thickness.

Coal Quality

The Knobloch coal has the following as-received characteristics:

% Moisture	29.28	% Volative Matter	29.26
% Ash	5.37	% Fixed Carbon	35.87
% Sulfur	.16	Btu/lb	8354

(Source: Matson and others, 1973)

This coal is classified as subbituminous C (ASTM, 1971, p. 59).

Surface Mining Considerations

A review of Montana operations with coal of a similar nature indicates a minimum mineable coal thickness of approximately 5 feet, a maximum economic stripping ratio of 6:1 (foot to foot), a maximum overburden depth of 300 feet, coal quality of 8000 Btu/lb or greater, and a maximum sulfur content of .75%.

All the recoverable coal of the Knobloch seam in this tract falls within the above criteria.

Mining Methods

The purpose of this report is not to require the successful lessee to use the method outlined in this report. Rather, its intention is to provide a "most probable" method of mining at this time, so that an economic evaluation can be performed to set the lease terms.

In the Powder River Basin of Montana and Wyoming, the shallowly buried coal seams of the Fort Union formation are very amenable to surface mining. Either a dragline, truck-shovel, or a combination of both operations may be used.

In general, a truck-shovel operation can achieve recovery at greater depths than dragline, because of the limited capacity of a dragline. However, Montana State law requires a final highwall reduction of 5h:1v (horizontal to vertical) ratio, making it more economical for a dragline operation in cover up to 250 feet. Montana State policy also requires an undisturbed 100' buffer zone within and along the perimeter of a coal lease.

Therefore, in order to satisfy both the 5h:lv highwall reduction and 100 foot buffer zone, an operator's coal recovery would have to stop a considerable distance from the lease boundary to allow enough room for benches and buffers. An operation using a dragline with truck-shovel assist uses fewer but higher benches than a straight truck-shovel, allowing more coal to be recovered at a cheaper cost.

To determine the optimum mix of surface mining systems for Maximum Economic Recovery (MER) would require a thorough economic analysis of the systems and designs which is beyond the scope of this report.

It is not technologically feasible to mine the Knobloch seam by underground methods at this time. The thickest coal currently being mined underground in the United States is 11 feet (Chironis, 1981). One company in Colorado is attempting to mine 28 feet of coal underground. However, that seam is 2000 to 3000 feet below the surface, providing minimal surface disturbance (Chironis, 1981). The Knobloch, on the other hand, is 60 feet thick beneath less than 300 feet of cover. Even if the Knobloch was technologically feasible to mine underground, an average of only 50% of the resource could be recovered (U.S. Department of Interior, 1977, p.I-50).

In order to attain MER of this 1949 acre tract, the area should be surface mined in conjunction with the Burlington Northern and State coal, using a dragline with truck-shovel assist (see figures 2 & 3).

Conclusion

Prior to mining, the successful bidder will be required to submit a complete mining plan which demonstrates MER.

At this time, it appears that MER can be achieved by mining the Knobloch seam through the use of a dragline with truck-shovel assist in conjunction with the private coal in the tract. There are no readily evident alternatives to the mining methods discussed.

The maximum recoverable tonnage from this 1949 acre tract is 119 million tons.

REFERENCES CITED

American Society for Testing and Materials, 1971, Standard specifications for classification of coals by rank (ASTM Designation D 388-66) in gaseous fuels, coal, and coake: pt. 19, p. 59.

Chironis, N. P., 1981, Research and development projects paying off in 1981: Coal Age, v. 86, no. 2, p. 74-94.

Decker Coal Company, 1981, North Decker 5-year permit application.

Divide Coal Mining Company, 1977, Mining and reclamation plan, submitted to the U.S. Geological Survey to satisfy 30 CFR 211 regulations.

Matson, R.E., Blumer, J.W., and Wegelin, L.A., 1973, Quality and reserves of strippable coal, selected deposits, southeastern Montana: Montana Bureau of Mines and Geology Bulletin 91, 135p.

U.S. Department of Interior, 1977, Final environmental impact statement, proposed Federal leasing program: I-49.

_____, 1981, Final Powder River regional coal environmental impact statement: Bureau of Land Management.

U.S. Geological Survey, 1980, Engineering report for Duck Nest Creek, Wyoming: District Mining Office, Casper, Wyoming.

Woodruff, E.G., 1909, The Red Lodge coal field, Montana: US. Geological Survey Bulletin 341, p. 92-107.

TABLE 1 --Selected proximate analyses for coal producing regions, Montana and Wyoming

Parameter	Coal producing region/coal seam analyzed					
	Tongue River, Montana/ Sawyer	Tongue River, Montana/ Knobloch ¹	Decker, Montana/ Dietz-1 ²	Colstrip, Montana/ Rosebud	Roundup, Montana/ Mammoth ³	Bear Creek, Montana/ No. 2 ⁴
Thickness (feet)	10 - 15	50-70	50	25	7 - 9	8
Coal quality:						
Btu/lb (as received)	7,915	8,246	9,733	8,920	10,510	11,194
Sulfur (percent)	.35	.14	.42	.99	.60	1.44
Ash (percent)	4.8	4.91	4.13	8.4	5.7	6.0
Moisture (percent)	32.25	30.00	23.63	23.10	16.90	10.03
Fixed carbon (percent)	33.8	37.1	39.0	40.1	44.6	46.7
Volatile matter (percent)	29.15	28.01	33.22	28.40	32.20	37.22
Mining method	Surface	Surface	Surface	Surface	Surface and underground	Underground
						Surface

¹Matson and others, 1973.

²Decker Coal Company, 1981.

³Divide Coal Mining Company, 1977.

⁴Woodruff, 1909.

⁵U.S. Geological Survey, 1980a.

TRACT DEVELOPMENT SUMMARY REPORT

November 5, 1981

A. Basic Data and Evaluation Assumptions

1. Tract Number: Ashland (Decker-Birney)
2. Type of Leasing Action (Competitive/PRLA): Competitive
3. Tract Location: 6 miles southeast of Ashland, Montana in Powder River County. See table 1 and figure 1.
4. Total Tract Acreage:

	<u>5528 acres (Total Tract)</u>
	<u>1949 acres (unleased Federal)</u>
	<u>2939 acres (Private)</u>
	<u>640 acres (State)</u>
5. Mining Method:
 - a. Stripping (dragline casting, truck shovel, etc. - if applicable) Dragline w/truck-shovel assist
 - b. Coal Production (surface or underground: longwall, continuous, or conventional) Surface
6. Mine Life Schedule (years):

a. Pre-Development	<u>1</u>
b. Development	<u>2</u>
c. Production	<u>40</u>
d. Post-Production	<u>2</u>
7. Annual Production Rate: 9.1 mty
8. Reserves (x10⁶ tons): Knobloch Seam - 60' thick

Ownership	In-Place Reserves	Recoverable Reserves
a. <u>Federal unleashed</u>	<u>132</u>	<u>119</u>
b. <u>Private</u>	<u>226</u>	<u>203</u>
c. <u>State</u>	<u>62</u>	<u>56</u>

9. Thickness of Partings Between Seams:

Parting Identification	Thickness
a. <u>None</u>	<u></u>
b. <u></u>	<u></u>
c. <u></u>	<u></u>
d. <u></u>	<u></u>

10. Overburden Thickness:

	Entire Tract	Unleased Federal
Minimum	0'	0'
Maximum	300'	225'
Average	200'	150'
Design (Dragline maximum)	160'	160'

11. Coal Preparation Required (Yes/No):

No

12. Anticipated Coal Price (\$/Ton):

\$10

13. Anticipated Coal Market:

Pacific Northwest Utilities/Export

14. Anticipated End Usage (Steam/Met):

Steam

B. Mining Plan

1. Discussion on How Mining Will Proceed: Mining will begin with boxcut

in low cover in northwest portion of tract and advance southeastward.

See figure 2.

2. Topographic map with original contours.

See figure 2.

3. Topographic map should illustrate:

See figure 2.

a. Tract boundaries;

b. Plant location and facilities;

- c. Roads and railway spurs;
 - d. Stream diversion dams;
 - e. Location of original cut or entry and direction in which mining will proceed; and
 - f. Outline of minable reserves.
4. General discussion on the following items:
- a. Plant facilities and location: See figure 2.
-
-
-
- b. Roads and railway spurs: Assuming the Tongue River Railroad (T.R.R.) will be built from Miles City to Ashland, Montana, a rail spur could be constructed the six miles from Ashland, to the tract.
-

5. Coal and overburden characteristics:

a. Coal density	<u>1770 tons/ac-ft</u>
b. Overburden density	<u>1.8-1.9 g/cc</u>
c. Highwall angle	<u>65°</u>
d. Spoil angle (angle of repose)	<u>38°</u>
e. Swell factor	<u>25%</u>
f. Estimated coal recovery factor	<u>90%</u>
g. Average coal haul distance (first seven years of production)	<u>1 mile</u>

C. Roads and Railroad Spurs

- 1. Miles of access roads from nearest highway to mine site: 1/2 mile
- 2. Miles of railroad spur required from nearest railroad: 6 miles (assuming T.R.R. is built).
Otherwise, the closest railroad is 28 miles away at Colstrip, Montana.

3. Miles of mine site roads

- a. Main haulage road (surface road): 3 miles
- b. Roads connecting mine facilities: None

D. Underground Mining

1. Number of entries in Main Entry System: _____
2. Type of main access (shaft, slope, drift): _____
3. Type of main haulage (belt/truck): _____

E. Supplementary Evaluation Information

1. Operating shifts per week:
- a. Stripping operations 21
- b. Overburden blasting 5
- c. Coal drilling, blasting, and loading 5
- d. Coal preparation 10
- e. Reclamation 3
2. Operating weeks per year: 52
3. Other
- a. Average topsoil depth in feet: Unknown
- b. Average one-way haul distance for topsoil handling: Unknown
- c. Linear footage of fencing required annually to protect revegetation: Unknown
- d. Linear footage of diversion dams: Unknown
- e. Cubic yards of dams: Unknown
- f. Cubic yards of basins: Unknown
- g. Distance to nearest utility voltage lines: 28 miles to Colstrip, Montana

(Unless the Montco mine gets its mine plan approved prior to the opening of this mine. Then the distance would be 7-8 miles.)

TABLE 1
LEGAL DESCRIPTION
OF ASHLAND (DECKER-BIRNEY)
PRELIMINARY LOGICAL MINING UNIT

T. 3 S., R. 45 E., P.M.M.,

- Sec. 25: All,
- * Sec. 26: S $\frac{1}{2}$, NE $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$,
- Sec. 27: SE $\frac{1}{4}$,
- Sec. 33: SE $\frac{1}{4}$,
- * Sec. 34: S $\frac{1}{2}$, NE $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$,
- Sec. 35: All,
- Sec. 36: All.

T. 4 S., R. 45 E., P.M.M.,

- Sec. 1: All,
- * Sec. 2: All,
- Sec. 3: All,
- * Sec. 4: N $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$,
- Sec. 4: SW $\frac{1}{4}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ SE $\frac{1}{4}$

* Indicates Federal coal.

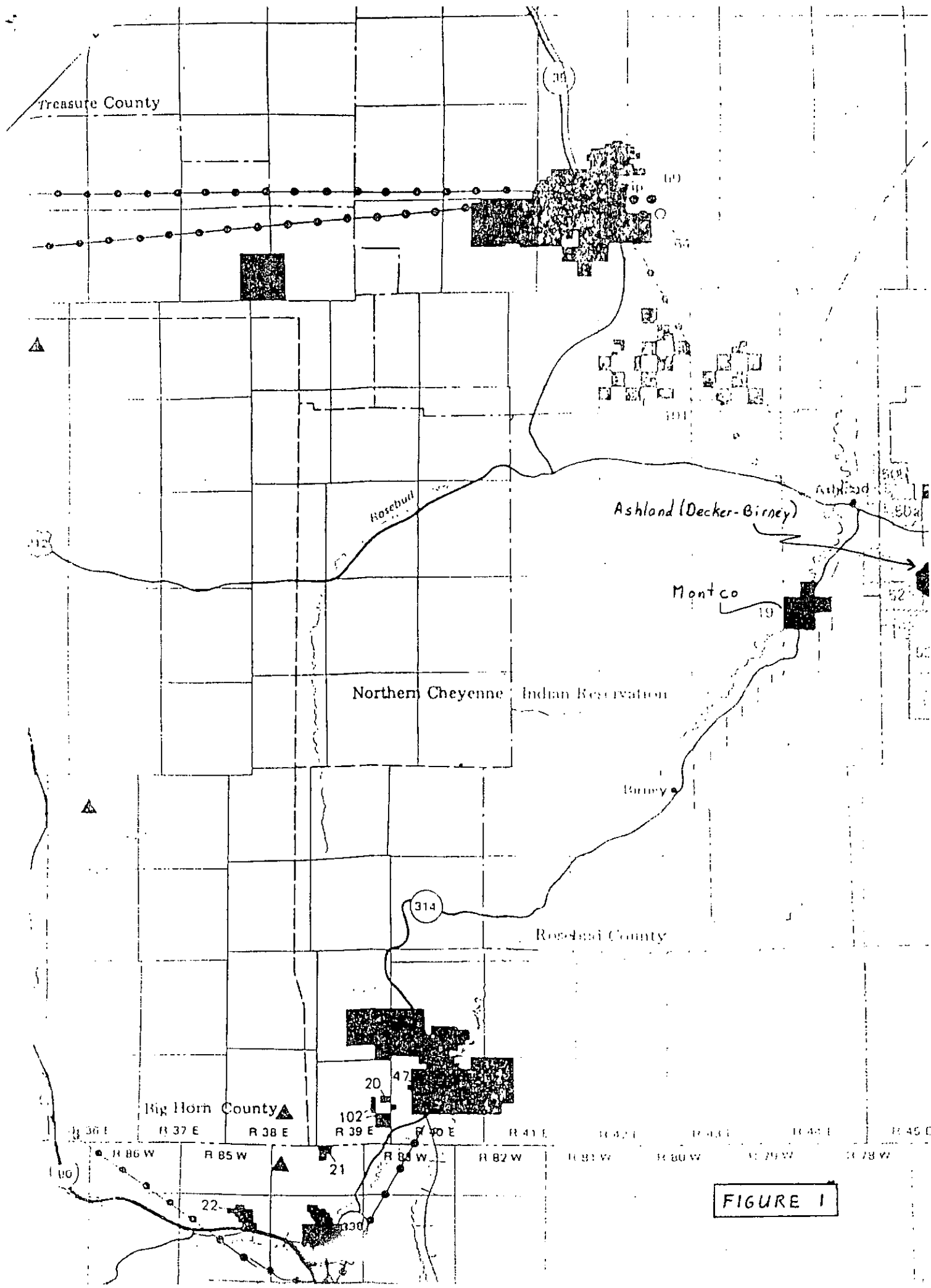
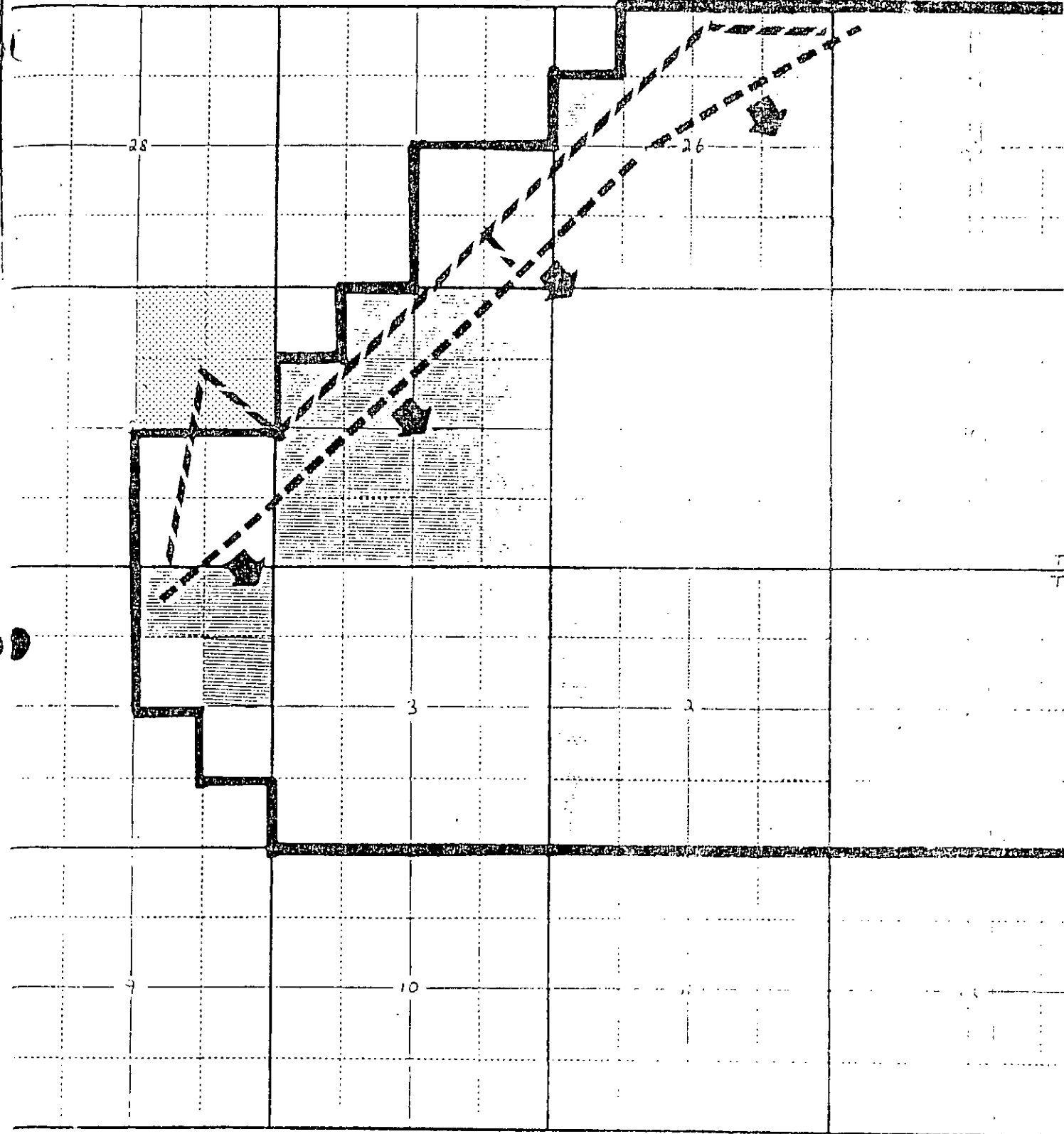


FIGURE 1

R 45 E.



SELBY RE-PRINT -- Form No. 301 ASHLAND (DECKER-BIRNEY) PRELIMINARY LOGICAL MINING UNIT (PLMU)

Figure 2



- PLMU BOUNDARY



- FEDERAL CO.



OUT OF-PLU HAUL ROADS



PROTECTED BOX CUT WITH DIRECTION OF ADVANCE



WATER FACILITIES

TRACT DELINEATION REPORT
ASHLAND (DECKER-BIRNEY)
PRELIMINARY LOGICAL MINING UNIT
Northern Powder River Basin, Montana
(Section B - Mining Engineering)

1. TYPE OF MINE -

(a) Surface dragline with truck-shovel assist

Even the largest draglines in use today in western surface mines cannot move more than 150 feet of overburden alone. In situations where the thickness and quality of the coal merits deeper recovery, the high cover is removed prior to dragline stripping with a combination of trucks, shovels, and scrapers.

(b) Percent recovery - 90%

2. LOCATION OF OPERATION - T. 3 S. - 4 S., R. 45 E., P.M.M.
approximately 5 miles southeast of Ashland, Montana.
(See Figures 1 and 2 and Table 1).

3. PRODUCTION RATE - 9,120,000 tons/year
Mine life - 40 years

4. POTENTIAL OR EXPECTED USE OF COAL - STEAM - ELECTRIC GENERATION -
The reserves could also support a moderately sized synfuel plant.

5. ACRES DISTURBED PER YEAR BY MINING -

$$\frac{6,240 \text{ acres}}{40 \text{ years}} = 156 \text{ acres/year}$$

6. ACRES DISTURBED BY MINING FOR LIFE OF MINE - 6,240 acres

7. PROJECTED ACRES DISTURBED FOR LIFE OF MINE BY FACILITIES AND
HAUL ROADS (See Figure 2).

Facilities - 160 acres

Haul Roads - 50 acres

8. PROJECTED EMPLOYMENT - 100 during first 2 - 3 years of construction,
250 during maximum production of 9.1 million tons

9. PROBABLE TRANSPORTATION METHOD - The most likely means of transporting the coal to the consumer would be via a 5-mile long spur line to the proposed Tongue River Railroad (TRR). The TRR has been proposed to run from Birney to Miles City, Montana, where it would connect with established Burlington Northern lines. It should be completed by the time a mine would open up in the Ashland (Decker-Birney) coal field.
10. ELECTRIC REQUIREMENTS - The typical power requirement for existing mines in the area is 20 mw. Both Colstrip and Decker are serviced by 230 kv lines. A line would have to extend the 33 miles from Colstrip or 44 miles from Decker, Montana. Because the proposed Nance mine, on private coal northeast of Birney, Montana may be in production before the Ashland (Decker-Birney) field is developed, it is possible that these power lines will already extend from Colstrip or Decker.
11. ESTIMATED WATER REQUIREMENTS AND PROBABLE SOURCE - Typical surface mines of this size use about 100,000 gallons of water per day for dust suppression, shop use, and human consumption. Water may be obtained from the nearby Tongue River and reservoir, or by means of wells.
12. MAJOR EQUIPMENT - Dragline, electric shovels, bottom-dump haul trucks, scrapers, rotary drills, front-end loaders, and other support equipment.
13. MINING SEQUENCE - A possible box cut and direction of advance is shown on Figure 2.
14. MINING RATIO - A maximum mining ratio of 5:1 would be reached in those limited areas of the Preliminary Logical Mining Unit (PLMU) where cover approaches 300 feet.
15. RECOVERABLE RESERVES (TONS) - 367.2 million tons
 - (a) Recoverable Federal - 108.9 million tons
 - (b) Recoverable State - 55.8 million tons
 - (c) Recoverable Fee - 202.5 million tonsKnobloch Seam Average Thickness - 60 feet

16. PROXIMATE COAL ANALYSIS FOR KNOBLACH BED

% Moisture	29.28	% Volative Matter	29.26
% Ash	5.37	% Fixed Carbon	35.87
% Sulphur	.16	Btu/lb	8354

17. ROYALTY VALUE OF MARKETABLE COAL PRODUCT AT CURRENT MARKET PRICE OF \$10/ton

- (a) Federal royalty - No less than 12½% of selling price.
- (b) State royalty - 12½% of selling price (or 18% of price of coal before any royalties added onto price).
- (c) Fee private royalty - Unknown, but assume 12½% for comparison purposes.
- (d) Assuming 29.7% of yearly production is from Federal, and 15.2% is from State of Montana and 55.1% from private coal...
 - (1) Federal royalty:

$$((9,120,000 \text{ tons/yr} \times 29.7\%) \times \$10/\text{ton}) \times 12.5\% \text{ royalty}$$

$$= \frac{\$3,385,800 \text{ Federal}}{\text{Royalty/year}}$$
 - (2) State royalty

$$((9,120,000 \text{ tons/yr} \times 15.2\%) \times \$10/\text{ton}) \times .12.5\% \text{ royalty}$$

$$= \frac{\$1,732,800 \text{ State}}{\text{Royalty/year}}$$
 - (3) Fee royalty

$$((9,120,000 \text{ tons/yr} \times 55.1\%) \times \$10/\text{ton}) \times 12.5\% \text{ royalty}$$

$$= \frac{\$6,281,400 \text{ Private}}{\text{Royalty/year}}$$

18. ACTIVE AND ABANDONED MINES IN THE VICINITY - The closest active mine is Coal Creek mine, a small, 25,000 ton/year operation 5 miles north of the Ashland (Decker-Birney) PLMU. Montco tentatively plans to open a major surface mine on private coal 10 miles southwest of the PLMU. The closest large scale mines are at Colstrip, and Decker, Montana, 33 and 44 miles away respectively. The only known abandoned mine on Federal coal in the area is in sec. 10, T. 3 S., R. 44 E., P.M.M. directly east of Ashland, Montana. This small underground mine supplied Ashland with coal from 1923 to 1936. Roughly, 2,300 tons of coal were removed. The Bureau of Land Management's Resource Lands Map for the area also shows a scattering of abandoned small scale mines in the area on private coal.

19. FEASIBILITY FOR SMALL BUSINESS SET ASIDE -

Low: There were no small business expressions of interest for this coal field. Furthermore, the coal is deep enough to require large amounts of capital to open a mine, which a small business would not have.

20. REMARKS - This tract was set up as an "alternative." Most of the coal, although thick, is under 100 - 300 feet of cover. No expressions of interest were received for this coal field. In fact, Cities Service has asked that the Ashland (Decker-Birney) coal field not be leased until later this decade. However, it is one of the few PLMUs that at this time has no environmental conflicts or surface owners against mining.

The PLMU is bounded by Custer National Forest to the east and northeast and clinker to the northwest, west, and south.

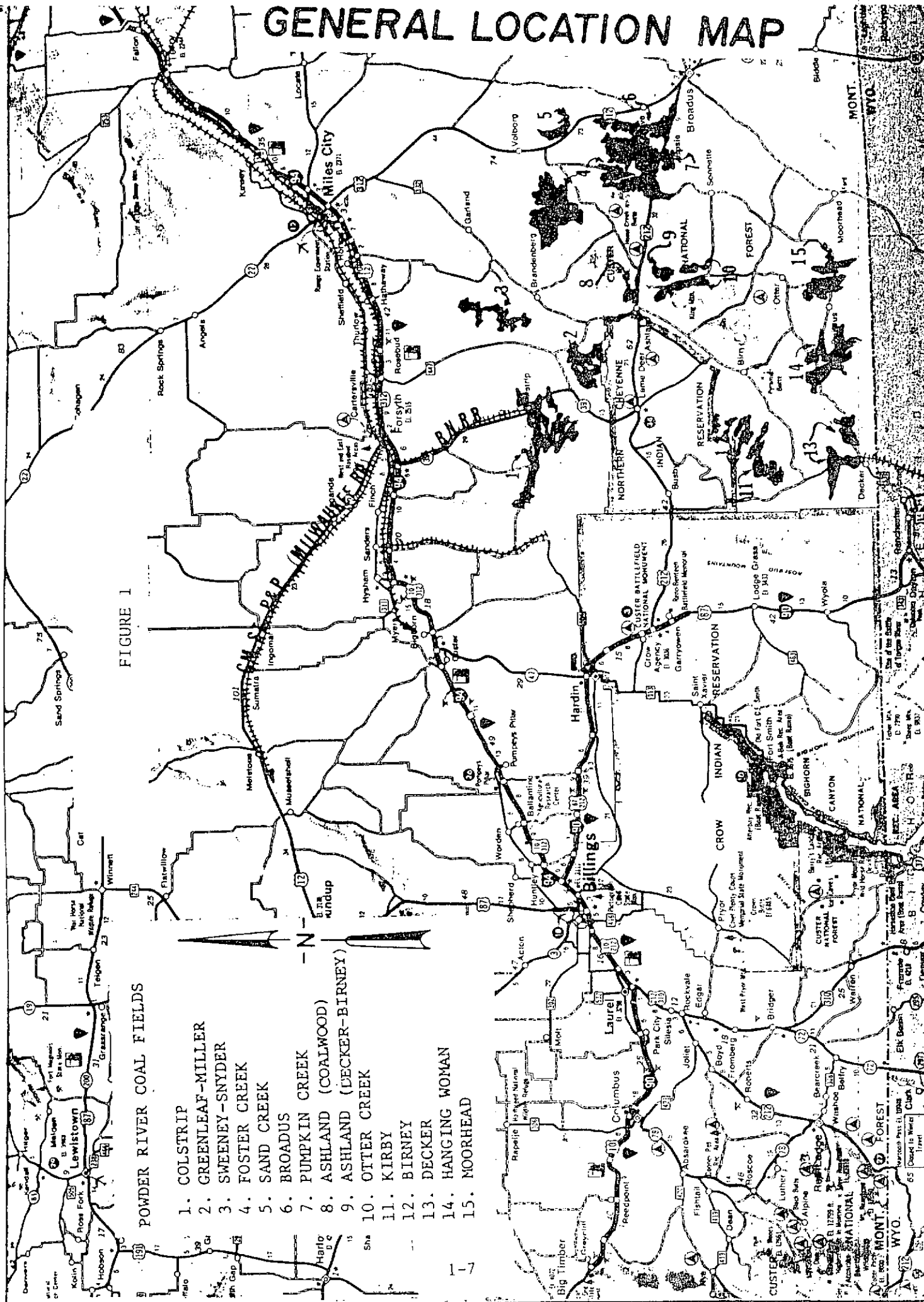
William B. Hansen
Mining Engineer, U.S.G.S.
October 10, 1980

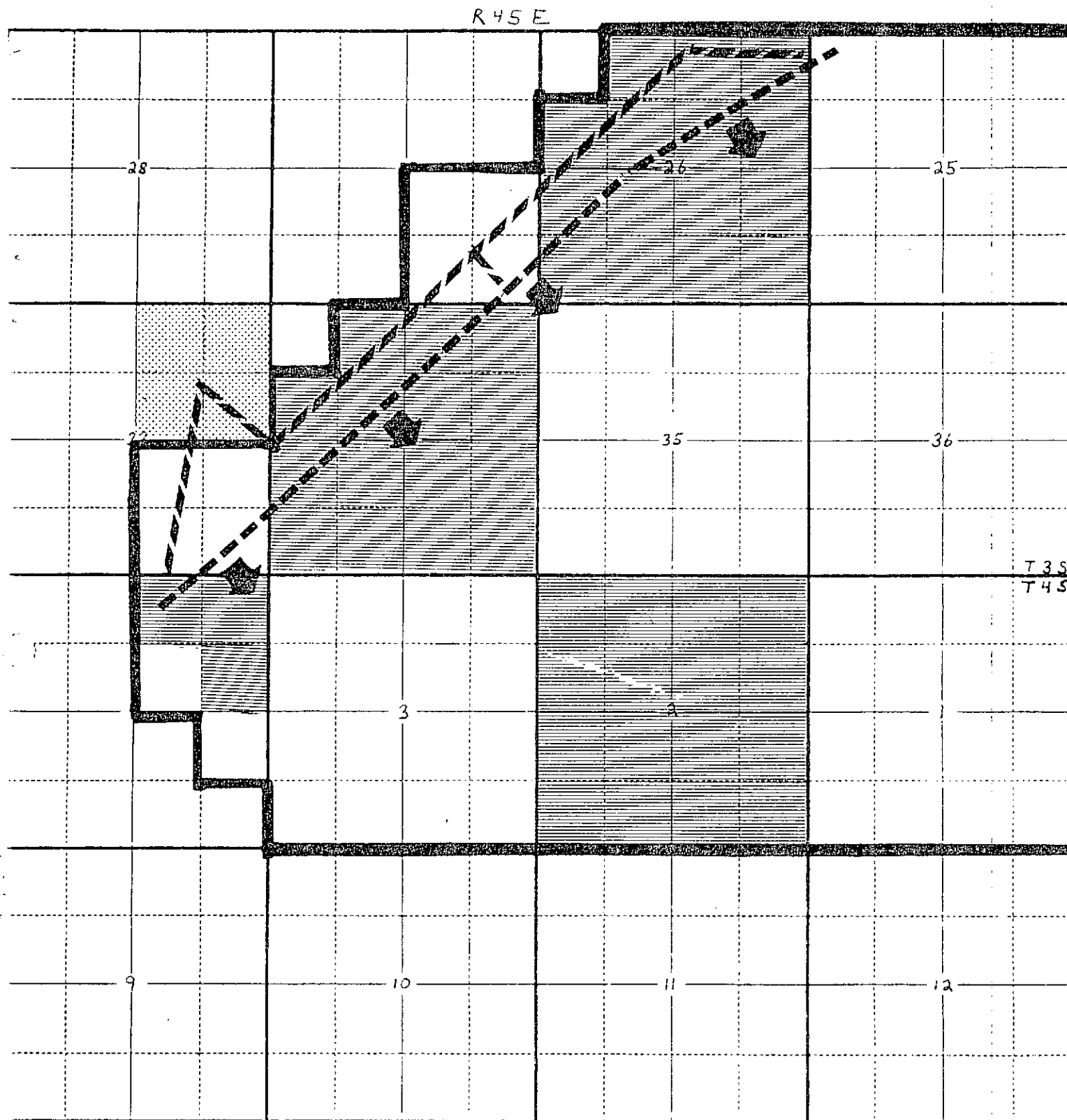
GENERAL LOCATION MAP

FIGURE 1

POWDER RIVER COAL FIELDS

1. COLSTRIP
2. GREENLEAF-MILLER
3. SWEENEY-SNYDER
4. FOSTER CREEK
5. SAND CREEK
6. BROADUS
7. PUMPKIN CREEK
8. ASHLAND (COALWOOD)
9. ASHLAND (DECKER-BIRNEY)
10. OTTER CREEK
11. KIRBY
12. BIRNEY
13. DECKER
14. HANGING WOMAN
15. MOORHEAD





SELBY RE-PRINT ** Form No. 301 ASHLAND (DECKER-BIRNEY) PRELIMINARY LOGICAL MINING UNIT (PLMU)

Figure 2



- PLMU BOUNDARY



- FEDERAL COAL



- OUT-OF-PIT HAUL ROADS



- PROJECTED BOX CUT WITH
DIRECTION OF ADVANCE



- MINE FACILITIES

Scale: 2 inches = 1 mile

TABLE 1
LEGAL DESCRIPTION
OF ASHLAND (DECKER-BIRNEY)
Preliminary Logical Mining Unit

T. 3 S., R. 45 E., P.M.M.

Sec. 25: All
*Sec. 26: $S\frac{1}{2}$, $NE\frac{1}{4}$, $S\frac{1}{2}NW\frac{1}{4}$, $NE\frac{1}{4}NW\frac{1}{4}$
Sec. 27: $SE\frac{1}{2}$
Sec. 33: $SE\frac{1}{4}$
*Sec. 34: $S\frac{1}{2}$, $NE\frac{1}{4}$, $S\frac{1}{2}NW\frac{1}{4}$, $NE\frac{1}{4}NW\frac{1}{4}$
Sec. 35: All
Sec. 36: All

T. 4 S., R. 45 E., P.M.M.

Sec. 1: All
*Sec. 2: All
Sec. 3: All
*Sec. 4: $N\frac{1}{2}NE\frac{1}{4}$, $SE\frac{1}{4}NE\frac{1}{4}$
Sec. 4: $SW\frac{1}{4}NE\frac{1}{4}$, $NE\frac{1}{4}SE\frac{1}{4}$

* Indicates Federal coal.

ASHLAND (DECKER-BIRNEY) PLMU
SECTION C
Combined Geologist/Engineer Input

2. INDICATION OF THE COMPETITIVENESS OF THE TRACT:

Factors to consider - No expressions of interest

- Fairly high overburden
- At least two companies have private leases in area
- No environmental conflict or surface owners against mining
- It is a self-contained PLMU (i.e. the PLMU boundaries could not be enlarged because of National Forest to the east and northeast, and burn lines to the northwest, west, and south.)

Based on these factors, the competition for this tract would probably be moderate.

3. RANKING OF THE PLMU: Medium